

The following listing of claims replaces all prior versions and listings of claims in the application:

**Listing of Claims:**

1. - 36. (cancelled)

37. (previously presented) A method for making a peptide-carrier conjugate comprising:

- a) modifying a first peptide to produce a second peptide that has a lower isoelectric point (pI) than the first peptide; and
- b) conjugating a plurality of the second peptide to a carrier protein to obtain a peptide-carrier conjugate,

wherein at least one of peptide load and solubility of the conjugate consisting of the plurality of the second peptide and carrier protein is increased as compared to a conjugate of a plurality of the first peptide and carrier protein and wherein the second peptide has a non-naturally occurring sequence.

38. (previously presented) The method of claim 37, wherein the carrier protein is selected from the group consisting of OMPC (outer membrane protein complex of *Neisseria meningitidis*), BSA (bovine serum albumin), OVA (ovalbumin), THY (bovine thyroglobulin), KLH (keyhole limpet hemocyanin), and tetanus toxoid protein, HBs (Hepatitis B virus surface



antigen protein), HBc (Hepatitis B virus core antigen protein), rotavirus capsid proteins, the L1 protein of the Human Papilloma Virus, VLP type 6, 11 or 16, and Dextran.

39. (currently amended) The method of claim 37 ~~39~~, wherein the carrier protein is OMPC.
40. (previously presented) The method of claim 37, wherein the modifying comprises acetylation of an N-terminal amino group.
41. (previously presented) The method of claim 40, wherein the N-terminal amino group is part of an N-terminal amino acid that is not present in the first peptide.
42. (previously presented) The method of claim 37 wherein the second peptide has a pI that is lower than 6.
43. (previously presented) The method of claim 37 wherein the second peptide has a pI that is between 2 and 6.
44. (previously presented) The method of claim 37 wherein the second peptide has a pI that is between 3.5 and 5.
45. (previously presented) The method of claim 37 wherein the first peptide has an amino acid sequence selected from a pathogen.



46. (previously presented) The method of claim 45 wherein the pathogen is selected from the group consisting of Haemophilus influenza, hepatitis viruses A, B, or C, HIV, human papilloma virus, measles, mumps, rubella, varicella, rotavirus, Streptococcus pneumonia and Staphylococcus aureus.

47. (previously presented) The method of claim 37 wherein the first peptide has an amino acid sequence selected from the group consisting of:

- a) HA protein of Influenza virus A or B; and
- b) gp41 protein of HIV.

48. (withdrawn) The method of claim 37 wherein the first peptide is modified by adding at least one amino acid with an anionic side chain.

49. (withdrawn) The method of claim 48 wherein the at least one amino acid with an anionic side chain is selected from the group consisting of Glutamate and Aspartate.

50. (withdrawn) The method of claim 37 wherein the first peptide is modified at a side chain of an amino acid residue.

51. (previously presented) The method of claim 50 wherein the side chain is modified in a manner selected from the group consisting of:



- a) phosphorylation of serine, threonine, tyrosine, aspartate, or histidine;
- b) sulphation of serine, threonine, tyrosine, aspartate, or histidine;
- c) carboxylation of glutamate;
- d) acylation of lysine; and
- e) oxidation of cysteine.

52. (previously presented) The method of claim 51 wherein the first peptide is modified at least one of its N-terminal or C-terminal residues.

53. (withdrawn) The method of claim 52 wherein the first peptide is an amidated peptide and is modified with carboxylation of the C-terminal residue.

54. (previously presented) The method of claim 52 wherein the first peptide is modified with acylation of the N-terminal amino group.

55. (previously presented) The method of claim 54 wherein the acylation is acetylation or succinylation.

56. (previously presented) The method of claim 37 wherein the plurality of the second peptide are conjugated to the carrier using an agent selected from the group consisting of sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate (sSMCC), N-maleimido-benzoyl-N-hydroxysuccinimide ester (MBS), glutaraldehyde, 1-ethyl-3-(3-



dimethylaminopropyl)carbodiimide (EDCI), Bis diazobenzidine (BDB), or N-acetyl homocysteine thiolactone (NAHT), N-maleimidobenzoyl-N hydroxysuccinimide ester (MB S), glutaraldehyde, 1-ethyl-3-(3-dimethylaminopropyl)carbodiimide (EDCI), Bis-diazobenzidine (BDB), and N-acetyl homocysteine thiolactone (NAHT).

57. (previously presented) The method of claim 56 wherein the agent is sSMCC.
58. (previously presented) The method of claim 37 wherein the first peptide has a molecular weight at the range from 500 Da to 30000 Da.
59. (previously presented) The method of claim 37 wherein the first peptide has a molecular weight at the range from 1400 Da to 7900 Da.
60. (previously presented) The method of claim 37, wherein the peptide load is increased.
61. (previously presented) The method of claim 60, wherein the peptide load is increased to more than 500 moles of peptide/mole of carrier protein.
62. (previously presented) The method of claim 60 wherein the peptide load is increased to more than 1000 moles of peptide/mole of carrier protein.